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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,052	12/09/2003	Tsuneo Nakahara	50395-241	2944

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Washington, DC 20005-3096

EXAMINER
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MOONEY, MICHAEL P

ART UNIT	PAPER NUMBER
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2883

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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**Office Action Summary**

Application No.

10/730,052

Applicant(s)

NAKAHARA

Examiner

Michael P. Mooney

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date 3/24/04.
- 4) ☐ Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garito et al. (PG PUB 20030180029).**

Although Garito et al. does not always use the exact same language as in the instant claims, e.g. the word "submedia", it would have been obvious to do so because Garito et al. does teach the elements that correspond to those in the instant claims as pointed out infra.

Garito et al. teaches an optical waveguide (paragraph 169) provided with a refractive-index profile for transmitting light, the optical waveguide comprising: (a) a main medium (paragraph 172 "host matrix") ; and (b) a multitude of submedia (e.g., paragraph 172 nanoparticles) that: (b1) have a refractive index smaller than that of the main medium (e.g., paragraphs 162-163, 169, 172) ; and (b2) are distributed in the main medium such that the submedia form minute regions each of which exists locally in the

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cross section perpendicular to the direction of the light traveling in the optical waveguide without extending along the axis of the optical waveguide (e.g., paragraphs 162-163, 169, 172; see also paragraphs 57-65); the refractive-index profile being formed based on one member selected from the group consisting of: (c) the refractive-index profile of the main medium itself; (d) the numerical distribution density of the minute regions; (e) the individual size of the minute regions; and (f) the numerical distribution density and individual size of the minute regions (e.g., paragraphs 162-163, 169, 172; see also paragraphs 57-65; figure 13(a)).

Thus claim 1 is rejected.

By the reasons and references given above, each and every element of claim 2 is rendered obvious under Garito et al. Thus claim 2 is rejected.

Regarding claim 3, although Garito et al. does not explicitly state that the submedia/nanoparticles are made of gas, it would have been obvious to do so because the interchangeability of gas bubbles/microspheres for submedia/nanoparticles or vice-versa is conventional for those skilled in the art.

One of ordinary skill in the art at the time the invention was made would have been motivated to use gas bubbles/microspheres as the submedia/nanoparticles for the purpose of idealizing the light transmission properties of the waveguide/fiber. Thus claim 3 is rejected.

Regarding claim 4, although Garito et al. does not explicitly state "1/10", it would have been obvious to do so because a size of the minute regions being at most 1/10 the wavelength is a conventional range for waveguide construction.

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One of ordinary skill in the art at the time the invention was made would have been motivated to state a size of the minute regions being at most  $1/10$  the wavelength for the purpose of enhancing the light transmission properties of the waveguide/fiber. Thus claim 4 is rejected.

Garito et al. teaches an optical fiber (e.g., see figure 13(a)). Thus claim 5 is rejected.

By the reasons and references given above, each and every element of method claim 6 is rendered obvious under Garito et al. If Applicant disagrees with this obviousness holding, then Applicant should submit evidence showing this obviousness holding is errant. Examiner will then consider restricting. Thus claim 6 is rejected.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. LaRue (20040134138) teaches the substitution/interchange of solid structure microspheres for gas microspheres.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Mooney whose telephone number is 571-272-2422. The examiner can normally be reached during weekdays, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-1562.

  
Michael P. Mooney  
Examiner  
Art Unit 2883

  
Frank G. Font  
Supervisory Patent Examiner  
Art Unit 2883

FGF/mpm  
6/19/05